

REMARKS

Upon receipt of this response, the Examiner is respectfully requested to contact the undersigned representative of the Applicant to arrange a telephone interview concerning the inventive merits of this application.

Claims 14-22 are presently pending in the Application and the Examiner objects to claim 21 due to an informality therein and rejects claims 14-22 under 35 U.S.C. 112, second paragraph, as indefinite on the grounds stated in the Official Action.

In response, claim 14-22 are suitably amended to address and overcome the grounds for objection to claim 21 and the grounds for rejection of claims 14-22. In view of such amendments, the Applicant accordingly respectfully requests that the Examiner reconsider and withdraw all objections to the claims and all rejections of the claims under 35 U.S.C. 112, second paragraph. It must be noted that the above amendments to claims 14-22 are fully supported by the specification, the drawings and the claims, as originally filed, and are submitted solely to overcome the stated objections to the claims and the rejections of the claims under 35 U.S.C. 112, and do not added any new subject matter to the invention, the specification or the claims.

Next, claims 14-22 are rejected, under 35 U.S.C. 103, over various combinations of Reynolds `062, Sandig `369 and Loeffler `493. The Applicant acknowledges and respectfully traverses all of the raised obviousness rejections in view of the above amendments and the following remarks.

In brief, the Examiner cites Reynolds `062 as teaching the basic arrangement of gears, input and output shafts and clutches recited in the claims, Sandig `369 as teaching the use of "pressure combs" to secure the axial positions of the gears, and Loeffler `493 as teaching the use of a double conical roller bearing to support an output shaft. The Applicant respectfully disagrees with and traverses the Examiner's interpretations of the Reynolds `062, Sandig `369 and Loeffler `493 references and the application of the Reynolds `062, Sandig `369 and Loeffler `493 references to claims 14-22 for the following reasons.

With regard to Figs 4, 5, Reynolds `062 relates to a compound countershaft transmission including a mainshaft 118, an output shaft 72 and a pair of secondary countershafts 120. Each of the secondary countershafts 120 rotationally supports a

separate--not integrally formed--hollow auxiliary countershaft section 80 by way of a first bearing 86 and an unnumbered bearing located radially inward of bearing 126, which are located between an exterior surface of the secondary countershafts 120 and an interior surface of the hollow auxiliary countershaft sections 80. One end of each secondary countershaft 120 is rotationally supported in the transmission housing by a third bearing 124 while the opposite ends of the each secondary countershaft 120 are indirectly supported by the transmission housing via a fourth bearing 126. An exterior of one end of the auxiliary countershaft sections 80 is rotationally supported in the transmission housing by bearings 126. In short, the transmission housing rotationally supports one end of the auxiliary countershaft sections 80 which, in turn, rotationally support one end of the secondary countershafts 120. And the opposite ends of the auxiliary countershaft sections 80 are supported by an end the secondary countershafts 120 which are, in turn, supported by the transmission housing. As such, the auxiliary countershafts 80 can rotate independently of the secondary countershafts 120 upon which they are supported.

The auxiliary countershafts 80 have a pair of gears 78, 82 fixed thereto which respectively engage with a gear 74, supported by the mainshaft 118, and a gear 84, fixed to the output shaft 84. This design of Reynolds '062 of which the auxiliary countershafts 80 rotate independently of the secondary countershafts 120 not only has a tendency to introduce radial play between the axial countershafts 80 and the secondary countershafts 120, but this design also has a tendency to introduce axial play between the axial countershaft 80 and the secondary countershafts 120. The drawbacks of axial play in a transmission of this type are discussed in the Background of the Invention of the present application. One of the aims of the presently claimed invention is to reduce and minimize, as much as possible, axial play in transmission. The first and second pressure combs 50, 52, 54, 56 maintain the output gear wheel 20 in axial alignment with the second gear wheels 16, 18 of the first and the second counter shafts 12, 14.

The claims of the application include limitations such that the counter shafts 12, 14 each have first and second gear wheels 8, 10, 16, 20 that are integrally formed with the counter shafts 12, 14. In this manner, there is no rotational or axial play between the counter shafts 12, 14 and their respective gear wheels 8, 10, 16, 20 as can occurred in the arrangement of

Reynolds '062, e.g., the auxiliary countershafts 80 can rotate and/or move axially independently of the secondary countershafts 120. Further, according to Reynolds '062, three unnumbered stops prevent the gears 74 and 160 from moving axially along the main shaft 118. These stops also concentrically center the gear 74 with respect to the main shaft 118, which is contrary to the presently claimed invention—see claim 22.

Lastly, the presently claimed invention—see claims 17, 20 and 22—all cover a double conical-roller bearings 26, 28 which radially and axially supports the drive output shaft 22 within a gearbox housing 30. Reynolds '062 clearly discloses a single bearing and thus does not teach, suggest, disclose or remotely hint at such claimed arrangement.

Turning now to Sandig '369, this reference relates to a toothed wheel unit with external toothing. The cited Fig. 14 of Sandig '369 shows spur wheels 1512, 1516, which engage each other by way of toothing 1520 and which are rotationally supported by way of bearings 1534a, 1534b. Each spur wheel 1512, 1516 includes integral pressure combs 1584a, 1584b, 1586a, 1586b which mate and axially secure the position of the spur wheel 1512, 1516 in relation to each other. Specifically it should be noted that axially internally facing sides of pressure combs 1584a, 1584b only communicate with axially externally facing sides of pressure combs 1586a, 1586b.

Moreover, as noted above, three unnumbered stops of Reynolds '062 prevent the gears 74 and 160 from moving axially along the main shaft 118. Accordingly, it is respectfully submitted that there would be no reason or motivation to combine Reynolds '062 with Sandig '369 as alleged by the Examiner since these stops prevent the gears 74 and 160 from moving axially along the main shaft 118.

In addition, the Applicant respectfully submits that the base reference of Reynolds '062 would need to be significantly materially altered and rearranged in order to be combined with Sandig '369, as suggested by the Examiner. Fig. 5 of Reynolds '062 teaches that the gear wheel 160 is directly adjacent the gear wheel 74, presumably to minimize the axial length of the gear box. As indicated above with regard to Sandig '369, the pressure combs 1584a, 1584b, 1586a, 1586b of the two spur wheels 1512, 1516 are axially spaced from the toothing 1520, such that if one were to combine the pressure combs of Sandig '369 with the gearing arrangement of Reynolds '062, one would have to elongate the axial length of the gearbox to

provide additional space to accommodate the pressure combs between the gear wheels 160 and 74 as suggested by the Examiner and this would typically lengthen the transmission. The unnumbered stops presumably achieve this feature and thus, it is respectfully submitted, that Sandig `369 is not properly combinable with Reynolds `062 as alleged.

The Applicant acknowledges that the additional reference of Loeffler `493 may arguably relate to the feature indicated by the Examiner in the official action. Nevertheless, the Applicant respectfully submits that the combination of the base reference of Reynolds `062 with this additional art of Sandig `369 and/or Loeffler `493 still fails to in any way teach, suggest or disclose the above distinguishing features of the presently claimed invention. As such, all of the raised rejections should be withdrawn at this time in view of the above amendments and remarks.

In order to emphasize the above noted distinctions between the presently claimed invention and the applied art, independent claim 14 of this application now recites the features of "a first solid counter shaft (12) and a second solid counter shaft (14) each having a first gear wheel (8, 10) and a second gear wheel (16, 18) integrally formed therewith...an output gear wheel (20) being integrally formed with the drive output shaft (22)...first and second pressure combs (50, 52, 54, 56), being secured to and solely carried by opposite sides of the output gear wheel (20), maintain the output gear wheel (20) in axial alignment with the second gear wheels (16, 18) of the first and the second counter shafts (12, 14)".

Independent claim 20 of this application further recites the features of "double conical-roller bearings (26, 28) radially and axially support the drive output shaft (22) within a gearbox housing (30); a first pair of pressure combs (54, 56) are solely carried by opposed sides of the loose gear wheel (6) for maintaining the loose gear wheel (6) in axial alignment with the first gear wheels (8, 10) of the first and the second counter shafts (12, 14), and the first pair of pressure combs (54, 56) are laterally located on outer teeth of the loose gear wheel (6) for solely centering the loose gear wheel (6) relative to the first gear wheels (8, 10) of the first and the second counter shafts (12, 14); and a second pair of pressure combs (50, 52) are solely carried by opposed sides of the output gear wheel (20) for maintaining the output gear wheel (20) in axial alignment with the second gear wheels (16, 18) of the first and the second counter

shafts (12, 14), and the second pair of pressure combs (50, 52) are laterally located on outer teeth of the gear wheel (20) of the drive output shaft (22)."

Independent claim 22 of this application now recites the above distinctive features as well as the additional distinctive features of the first solid counter shaft (12) and a second solid counter shaft (14) each "consisting solely of an integrally formed first gear wheel (8, 10) and an integrally formed second gear wheel (16, 18)" and the first pair of pressure combs 54, 56 solely center "the loose gear wheel (6) relative to the first gear wheels (8, 10) of the first and the second counter shafts (12, 14) and concentrically with respect to the input shaft (4) such that the loose gear wheel (6) can move axially relative to the input shaft (4)". Such features are believed to clearly and patentably distinguish the presently claimed invention from all of the art of record, including the applied art.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised rejections should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejections or applicability of the Reynolds `062, Sandig `369 and Loeffler `493 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

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The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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